

# Nicklaus Choo

SOFTWARE ENGINEER · GOOGLE

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## Work Experience

**Google** SOFTWARE ENGINEER FULL-TIME *SunnyVale, CA, USA*

*Aug 29, 2022 - Present*

- Develop algorithms to model, monitor and improve computer networks at Google
- 10x speedup for network design process with 15x reduction in memory resources for network topology graph data structures.
- Wrote graph traversal algorithms to efficiently traverse Google's network topology and detect single points of failure.
- Improved automation to re-map 25% of all edge network customers to greatly improve customer cost center allocation.

**NetApp** SOFTWARE ENGINEER INTERN *SunnyVale, CA, USA*

*May 24, 2021 - Aug 20, 2021*

- 3x speedup for OS compile-update-reboot time for ONTAP virtual machines
- Automated ONTAP cloud cluster setup configuration for dynamic load testing
- 2.7x speedup for WAFL scheduler client I/O latency with minimal slowdown (0.8x) to WAFL scheduler replication operations latency
- Further optimized 3.5x speedup for client I/O and 1.2x speedup for replication operations with online random forest server load prediction

**ZODAJ** FULL STACK SOFTWARE ENGINEER INTERN *Pittsburgh, PA, USA*

*May 18, 2020 - Aug 7, 2020*

- Devised SMS and Android COVID-19 contact tracing for Senegal in partnership with Senegalese health authorities
- Designed NoSQL, PostgreSQL databases along with AWS Lambda RESTful API for TCN protocol contact tracing
- Directed and implemented all permissions and roles within ZODAJ for Amazon AWS databases
- Created exposure overlap algorithm for  $n$  people in a store that runs in  $\max(O(k) \text{ or } O(n \log n))$ , where  $k$  is overlap count
- Wrote graph algorithms, discrete-time Markov chain SIR epidemic modeling for tracking infections

**BOSCH ASEAN** LINUX SYSTEMS ENGINEER INTERN (DEVOPS) *Singapore*

*May 21, 2019 - Aug 19, 2019*

- Enabled Jenkins server to run 2 ISO builds in parallel (1 executor, 2 slaves) for testing via dynamic port allocation
- Identified bottleneck in debugging failed builds and significantly reduced debug time via auto log extraction from QEMU disks on build servers
- Modified Jenkins pipeline to reduce deployment testing from 20 mins to 1 min
- Began migration of current inventory servers to new OCS inventory servers via Ansible for seamless configuration
- Authored Linux Debian package for unit tests automation (security/functionality) on new OS installations

**Eyeota Pte Ltd** DATA ANALYTICS INTERN *Singapore*

*Dec 13, 2017 - May 10, 2018*

- Programmed data cleaning and classification of advertiser and buyer data from programmatic buy-side platforms
- Extracted advertisers' target demographic trends via both web-scraping and buyers' purchasing data
- Streamlined updates of daily, weekly, and monthly audience data sales revenue via complete process automation

## Education

**Carnegie Mellon University**

*Pittsburgh, PA, USA*

B.S. IN COMPUTER SCIENCE, CONCENTRATION IN ALGORITHMS & COMPLEXITY WITH UNIVERSITY HONORS

*Aug 2018 - May 2022*

- Cumulative GPA **3.55**, School of Computer Science Dean's List, High Honors F19, F20, F21.

• Selected courses:

**10-701** Machine Learning (PhD)

**15-356** Cryptography

**21-241** Linear Algebra

**15-410** Operating Systems

**15-210** Parallel Data Structures & Algos

**21-259** Calculus 3D

**15-411** Compiler Design (C++)

**15-213** Introduction to Computer Systems

**21-301** Combinatorics

**15-440** Distributed Systems (Java)

**15-251** Great Ideas in Theoretical CS

**21-373** Abstract Algebra

**15-451** Algorithm Design & Analysis

**15-259** Probability & Computing

**80-413** Category Theory

**15-459** Quantum Computation

**15-260** Statistics & Computing

## Extracurriculars & Projects

**Pebbles Kernel**

- Created x86 kernel from scratch which supports essential syscalls such as fork/exec/wait, pre-emptive multitasking.
- Wrote device drivers for keyboard, timer, and hardware cursor.
- Code available at [github.com/nicklausyc/small-kernel](https://github.com/nicklausyc/small-kernel)

**15-251 Great Ideas in Theoretical CS Course Tutor**

- Conducted one-on-one tutoring sessions for students in the class

## Technical Proficiencies

**Languages**

- C | C++ | Python | Java | Bash | SML | HTML | CSS | JavaScript